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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,558	07/10/2001	Raphael Rahamim	39852/CAG/B600	4803
23363	7590	12/01/2005	EXAMINER	
CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			SINGH, RAMNANDAN P	
			ART UNIT	PAPER NUMBER
			2646	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/901,558

Applicant(s)

RAHAMIM ET AL.

Examiner

Ramnandan Singh

Art Unit

2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 59,66-71,77,83-88 and 94-100 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 59,66-71,77,83-88 and 94-100 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments on Aug. 22, 2005 have been considered but are moot in view of the new ground(s) of rejection.

### **2. Status of Claims**

Claims 1-58, 60-65, 72-76, 78-82, 89-93, and 101-110 are cancelled.

Claims 59, 77 and 94 are amended.

Claims 59, 66-71, 77, 83-88 and 94-100 are pending.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 59, 66-69, 77, 83-86 and 94-100 rejected under 35 U.S.C. 103(a) as being unpatentable over Polley et al [US 6,618,480 B1] in view of Nabicht et al [US 6,621,346 B1].

Regarding claim 59, Polley et al teach an analog-front-end (AFE) for a digital subscriber line (DSL) modem shown in Fig. 1, the analog-front-end comprising:

a single-end receive channel (i.e. path) (22));

a single-end transmit channel (21);

a converter (i.e. an electronic hybrid 24) configured to convert a differential input signal from a twisted pair telephone line (14) to a single-ended input signal for the receive channel, and convert a single-ended output from the transmit channel to a differential output signal for transmission on the twisted pair telephone line [Figs. 1-2; col. 1, line 29 to col. 2, line 21; col. 5, lines 10-15; Abstract].

Polley et al do not teach expressly an amplifier having an automatic gain control having a single-ended input.

Nabicht et al teach an analog front end (12) in a DSL modem (15) system [Figs. 1-5; col. 3, line 51 to col. 4, line 26], wherein the single-ended received channel comprises an automatic gain control amplifier (54C) having a single-ended input coupled to the single-ended receive channel, and a single-ended output [Figs. 4, 5; col. 6, lines 4-27; col. 8, line 54 to col. 9, line 14]; a single-ended first filter (58C) coupled to the automatic gain control output ; and a single-ended second filter (50C) coupled to the transmit channel for filtering the single-ended output signal before conversion to the differential signal for transmission on the twisted pair telephone line [col. 7, lines 13-34; col. 7, lines 4-27]. It is nevertheless a teaching to one of ordinary skill in the art to do the to the applications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Nabicht et al with Polley et al in order to

provide stable operations in a high-frequency, high precision, and high-data rate modem system [Nabicht et al; col. 4, lines 31-46; col. 9, lines 5-14].

Claims 77 and 94 are essentially similar to claim 59 and are rejected for the reasons stated above.

Regarding claim 66, although Polley et al teach the analog front end having amplifiers to amplify transmit and receive signals [Fig. 2], they do not disclose expressly an amplifier having automatic gain control.

Nabicht et al teach an analog front end (12) in a DSL modem (15) system [Figs. 1-5; col. 3, line 51 to col. 4, line 26], wherein the single-ended received channel comprises an amplifier (54C) having automatic gain control [Figs. 4, 5; col. 6, lines 4-27; col. 8, line 54 to col. 9, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the automatic gain control amplifier of Nabicht et al with Polley et al in order to provide stable operations in a high-frequency, high precision, and high-data rate modem system [Nabicht et al; col. 4, lines 31-46; col. 9, lines 5-14].

Claim 83 is essentially similar to claim 66 and is rejected for the reasons stated above.

Regarding claims 95-97, see Fig. 4 of Nabicht et al [col. 9, lines 5-14].

Regarding claims 67-69, Nabicht et al further teach the AFE wherein the automatic gain control circuit of the amplifier 54C comprises linear voltage controlled resistors made of semiconductor field effect transistors (MOSFET) shown in Fig. 5, functioning as a variable attenuator configured to attenuate the single-ended input signal [Figs. 4-5; col. 8, line 19 to col. 9, line 59; col. 11, lines 29-55].

Regarding claims 84-86, 98-100, the limitations are shown above.

5. Claims 70-71 and 87-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Polley et al and Nabicht et al as applied to claims 69, and 86 respectively above, and further in view of Ouellette [US 4,178,482].

Regarding claims 70-71, although Nabicht et al an automatic gain control amplifier 54C [Figs. 4, 5; col. 6, lines 4-27; col. 8, line 54 to col. 9, line 14], they do not disclose expressly the structure of a field-effect transistor (MOSFET). It may, however, be noted that the structure of the field-effect transistor is well-known in the art.

Ouellette teaches the structure and configurations of a field-effect transistor (MOSFET) for use in an automatic gain control circuit [Figs. 1-5; col. 2, lines 3-17; col. 5, lines 55-62; col. 11, lines 40-47; col. 11, line 55 to col. 12, line 29].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the structure and configuration of the field-effect transistor (MOSFET) of the automatic gain control circuit of Ouellette with Nabicht et al in order to eliminate frequency intermodulation and distortion problems at a receiver's AGC circuit [Ouellette; col.1, lines 61-68].

Regarding claims, 87 and 88, the limitations are shown above.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Prendergast et al [US 20010036261 A1] teach a configurable analog front end (AFE) for communication systems [Para: 0018; 0097-0098; 0136-0138; 0172];

(ii) Tennen et al [US 6,801,621 B1] teach an improved line driver-hybrid and method for increasing the power efficiency, signal accuracy and stability of a transmit signal [Fig. 4; col. 5, lines 45-67].

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh  
Examiner  
Art Unit 2646

A handwritten signature in black ink, appearing to be 'RMS', written over a horizontal line.

  
**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**